

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VII (NEW) EXAMINATION – SUMMER 2022****Subject Code:2170613****Date:01/06/2022****Subject Name:Traffic Engineering****Time:02:30 PM TO 05:00 PM****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

| | | MARKS |
|------------|--|--------------|
| Q.1 | (a) Explain PIEV theory? How it affects the road safety | 03 |
| | (b) Differentiate the role of - Traffic signal, Road Marking, Channelization, Rotary Intersection in the scope of road safety aspect | 04 |
| | (c) Draw collision and condition diagram by showing its features. List preventive measure for road accidents | 07 |
| Q.2 | (a) Differentiate between Skid and Slip | 03 |
| | (b) Define (i) PCU (ii) Traffic Volume (iii) Traffic Density (iv) Traffic Capacity | 04 |
| | (c) Draw a neat sketch of rotary intersection, show all design components and Explain about them in brief. | 07 |
| OR | | |
| | (c) How do different vehicular characteristics and Road user characteristics affects road features ? | 07 |
| Q.3 | (a) Suggest following as per MoRTH (1) Maximum width of vehicle (2) Maximum height of single decked vehicle (3) Maximum length with single unit truck with two or more axle | 03 |
| | (b) Explain by drawing sketch types of on-street & off-street parking systems | 04 |
| | (c) What is channelized intersection? suggest its function and draw the sketch of typical channelized intersections | 07 |
| OR | | |
| Q.3 | (a) Suggest How the design speed and safe speed limit is fixed by highway design engineer | 03 |
| | (b) Explain about classified traffic volume count survey with observation table. | 04 |
| | (c) Draw a neat sketch of interchanges (i) Partial clover leaf (ii) Full clover leaf (iii) Diamond | 07 |
| Q.4 | (a) Draw basic traffic manoeuvres-Diverging, Merging, Crossing and Weaving | 03 |
| | (b) Suggest the advantages of rotary intersection compared to signalized intersection, How it improves the road safety aspect | 04 |
| | (c) List out various Mandatory, Warning and Informatory signs and Draw any three of each | 07 |
| OR | | |
| Q.4 | (a) Define (i) signal cycle (ii) signal phase (iii) saturation flow | 03 |

- (b) Draw sketch of different Lighting layouts **04**
- (c) Explain Webster's method of signal design. **07**

- Q.5**
- (a) Define: Luminous flux, Lumen, Candela **03**
 - (b) Define Time mean speed and Space mean speed **04**
 - (c) Suggest specific **07**
 - (a) Methods of survey
 - (b) Purpose of survey and with its field application

For below listed traffic survey

- (1) Classified traffic volume
- (2) Speed and delay study
- (3) Spot speed study
- (4) O and D study
- (5) Parking study
- (6) Accident study

OR

- Q.5**
- (a) Suggest the carriageway width dimension as per Indian Roads Congress (IRC) **03**
 - (1) Single lane
 - (2) Two lane
 - (3) Six lane divided
 - (b) Draw different road marking and its function, Suggest white color and yellow color road marking purposes **04**
 - (c) Example : A street lighting system is to be designed for following conditions: **07**
 - Street width : 15 m
 - Mounting height : 7.5 m
 - Lamp size : 6000 lumen
 - Luminaire type : II
 - Assume maintenance factor : 0.8
 - Consider utilization factor : 0.35
 - Calculate the spacing between lighting units to produce average lighting intensity of 6.0 lux.
